

## CLAIMS

What is claimed is:

1. An oligonucleotide of about 15 to 30 nucleotides in length, comprising at least 10 contiguous nucleotides of a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5, and 6, the complement thereto, or a derivative thereof.

2. The oligonucleotide of claim 1, which comprises at least 15 contiguous nucleotides of a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5, and 6, the complement thereto, or a derivative thereof.

3. The oligonucleotide of claim 1, which comprises a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5 and 6, the complement thereto, or a derivative thereof.

4. A primer pair, comprising:

- (a) a first primer of about 15 to 30 nucleotides in length, comprising at least 10 contiguous nucleotides of a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5, and 6, the complement thereto, or a derivative thereof; and
- (b) a second primer comprising a nucleic acid of about 15 and 30 nucleotides in length that does not comprise the sequence of said first primer and is found in the region from V $\beta$  to C $\beta$  of the T cell receptor gene in T cells,

wherein the sequences of said first and second primers are not found on the same strand of the T cell receptor gene.

5. The primer pair of claim 4, wherein the second primer comprises a sequence selected from the group consisting of SEQ ID NOS: 7, 8 and 9.

6. An oligonucleotide probe comprising:

- (a) an oligonucleotide of about 10 to 30 nucleotides in length, comprising at least 10 contiguous nucleotides of a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5 and 6, the complement thereto, or a derivative thereof, and
- (b) a labeling moiety.

7. The oligonucleotide probe of claim 6, wherein the labeling moiety is selected from the group consisting of  $^{32}\text{P}$ ,  $^{35}\text{S}$ , biotin and digoxigenin.

8. A method of detecting MBP83-99 T cells expressing a T cell receptor motif selected from the group consisting of SEQ ID NOS: 4, 5 and 6, or a derivative thereof, comprising:

- (a) obtaining a nucleic acid sample from MBP83-99 T cells;
  - (i) contacting the nucleic acid sample with a primer pair selected from:
    - (ii) a first oligonucleotide of about 15 to 30 nucleotides in length, comprising at least 10 contiguous nucleotides of a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5 and 6, the complement thereto, or a derivative thereof; and
    - (iii) a second oligonucleotide of about 15 and 30 nucleotides in length that does not comprise the sequence of the first oligonucleotide and is found in the region from V $\beta$  to C $\beta$  of the T cell receptor gene in T cells,

wherein the sequences of the first and second oligonucleotides are not found on the same strand of the T cell receptor gene; and

- (b) detecting the presence of the nucleic acid encoding the T cell receptor motif.

9. The method of claim 8, wherein the second primer comprises a sequence selected from the group consisting of SEQ ID NOS: 7, 8 and 9.

10. The method according to claim 8, wherein a fragment of the nucleic acid sample is amplified by polymerase chain reaction (PCR).

11. The method according to claim 10, wherein the detection step comprises probing with an oligonucleotide probe comprising:

- (a) an oligonucleotide, which comprises a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5, and 6, the complement thereto, or a derivative thereof; and
- (b) a labeling moiety.

12. The method according to claim 10, wherein the detection step comprises autoradiography.

13. A test kit comprising a first oligonucleotide of about 15-30 nucleotides in length, said first oligonucleotide comprising at least 10 contiguous nucleotides of a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5 and 6, the complement thereto, or a derivative thereof.

14. The test kit of claim 13, further comprising: a second oligonucleotide of about 15 and 30 nucleotides in length that does not comprise the sequence of said first oligonucleotide and is found in the region from V $\beta$  to C $\beta$  of the T cell receptor gene in T cells, wherein the sequences of the first and second oligonucleotides are not found on the same strand of the T cell receptor gene.

15. The test kit of claim 14, wherein the second primer comprises a sequence selected from the group consisting of SEQ ID NOS: 7, 8 and 9.

16. The test kit of claim 13, further comprising a labeling moiety, wherein the labeling moiety is selected from the group consisting of  $^{32}\text{P}$ ,  $^{35}\text{S}$ , biotin and digoxigenin.

17. A method of monitoring an autoimmune disease, comprising:

- (a) obtaining MBP83-99 T cells from a human;
- (b) detecting the presence of a nucleic acid encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5 and 6, or a derivative thereof.
  - (i) obtaining a nucleic acid sample from MBP83-99 T cells;
  - (ii) contacting the nucleic acid sample with a primer pair selected from:
    - a. a first oligonucleotide of about 15 to 30 nucleotides in length, comprising at least 10 contiguous nucleotides of a sequence encoding a sequence selected from the group consisting of SEQ ID NOS: 4, 5 and 6, the complement thereto, or a derivative thereof; and

- b. a second oligonucleotide of about 15 and 30 nucleotides in length that does not comprise the sequence of said first oligonucleotide and is found in the region from V $\beta$  to C $\beta$  of the T cell receptor gene in T cells, wherein the sequences of said first and second oligonucleotides are not found on the same strand of the T cell receptor gene; and
- c. detecting the presence of the nucleic acid encoding the T cell receptor motif; and, if the nucleic acid is detected,

(c) quantifying the amount of the nucleic acid.

18. The method of 17, wherein the second primer comprises a sequence selected from the group consisting of SEQ ID NOS: 7, 8 and 9.

19. A vaccine comprising a first peptide, said first peptide comprising a sequence selected from the group consisting of SEQ ID NOS: 4, 5 and 6, or a derivative thereof, and optionally a pharmaceutically acceptable carrier.

20. The vaccine of claim 19 further comprising at least a second peptide comprising a sequence selected from the group consisting of SEQ ID NOS: 4, 5, 6 and 7, or a derivative thereof, and optionally a pharmaceutically acceptable carrier, wherein the sequences of the first and second peptide are different.

21. A method of treating an autoimmune disease comprising administering to a patient with an autoimmune disease the vaccine according to any one of claims 19 or 20.